

REMARKS

The title of invention is said to be not descriptive, and in response, a new title more clearly indicative of the invention to which the claims are directed, is presented.

Claims 1-7 stand rejected under 35 USC 112, second paragraph, as being indefinite. This rejection is predicated on use of the term “Grating Light Valve™” in claims 1 and 5. Claims 1 and 5, which have been rewritten as new claims 12 and 13, respectively, recruit the generic wording “reflection type spatial modulator,” presumed to be acceptable. Accordingly, withdrawal of the rejection of claims 1-7 under the second paragraph of 35 USC 112 is solicited.

Claims 1-3 and 8-10 stand rejected under 35 USC 103(a) as being unpatentable over Bloom et al. in view of applicant’s acknowledged prior art (AAPA). Claims 4-7 and 11 stand rejected under 35 USC 103(a) as being unpatentable over the same references, further in view of Ramanujan et al. These rejections, as they would apply to the current set of claims, following entry of this response, i.e., including claims 12-14, is traversed.

To expedite prosecution, claims 1, 5 and 8, each of which is independent, is canceled in favor of claims 12, 13 and 14, respectively. The subject matter of claims 12, 13 and 14, together with their dependencies, provide a solution to a problem endemic to image recorders implementing a reflection type spatial modulator having reflecting ribbons arrayed in parallel, and a glass window a small distance away from the reflecting ribbons, in which interference created by internal reflections at the reflection ribbons tends to occur.

More specifically, per claims 12 and 13, the laser imager has a first laser beam converted by a first optical system to a second laser beam that, in turn, is converted by the reflection type spatial modulator to a modulated third beam, to be focused on an image recording medium. If

the second laser beam perpendicularly enters the glass window, interference fringes are generated by first optical reflection at the reflecting ribbons and second optical reflection at the glass window. To avoid this undesirable phenomenon, the claims further provide that an optical axis of the second beam incident on the reflection type spatial modulator forms a non zero angle with the normal to the reflection type spatial modulator. With interference prevented between the first optical reflection at the reflection ribbons and the second optical reflection at the glass window, an image of higher quality than otherwise possible can be recorded on the image recording medium.

Claim 14 describes the image laser in terms of a first laser light source, and an optical system for changing the optical axis direction of the light beam for focusing on a recording medium. The optical system is of the type described with respect to claims 12 and 13, with tendency to exhibit interference by reflections between reflection ribbons and window glass, and solution therefore.

These claims, as well as their dependencies, are patentably distinguishable over the proposed combinations of references, as none of the references is concerned with reflection interference between reflecting ribbons and glass window; indeed, there is no glass window in those references.

With reference to Bloom et al, the Examiner indicated an optical axis of a laser beam is tilted to the normal to the GLV array 10 in a section from the mirror 80 to the lens 50 in Fig. 8A. However, an optical axis of a laser beam immediately before incidence on the GLV array 10, that is, in a section 79, is parallel to the normal to the GLV array 10. In contrast, the second laser beam enters the reflection type spatial modulator at a tilt angle in the present invention. In addition, no glass window is provided to the GLV array 10 of Bloom et al.

The Examiner further indicated “such glass window is always part of the reflective modulator GLV™ as disclosed by AAPA”. However, even if the GLV array 10 of Bloom et al. comprises a glass window, incidence cannot be prevented between the first optical reflection at the reflecting ribbons and the second optical reflection at the window glass.

With reference to Ramanujan et al, it discloses a laser beam incident onto a grating modulator array 40 at a tilt angle. However, the grating modulator array 40 comprises no glass window. That is, Ramanujan et al. provides no teaching which advantageously prevents interference between two optical reflections.

The Examiner indicated in the outstanding office action “It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a deflecting prism and/or a total internal reflection prism on the optical axis of the modulated light beam as taught by Ramanujan et al. in the modified device as a combination of Bloom et al. The motivation for doing so would have been to allow the modulated beam to be directed to the surface to be imaged without interference ...”. However, Ramanujan et al. provides no indication that incidence of a laser beam at a tile angle advantageously serves to prevent interference between lights as a result of existence of a glass window. In view of this, a person having ordinary skill in the art would not have been realistically led to employ the configuration as disclosed in Ramanujan et al. with the intention of preventing interference between lights.

As discussed, Bloom et al. and Ramanujan et al. both fail to teach the idea of preventing interference between two optical reflections by means of incidence of a laser beam at an angle tilted to the normal to the reflection type spatial modulator. The present invention is hence believed to be patentable over the references.

In view of the foregoing, in summary, claims 12 (and dependent claims 2-4), 13 (and dependent claims 6, 7) and 14 (and dependent claims 9-11) are in condition for allowance, and such favorable action is earnestly requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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